

CLAIMS

1. An abrasive article comprising abrasive particles and a UV-cured formulation and a filler, wherein the filler is substantially transparent to UV-radiation and the filler is present in a range from 20 to 80 percent by weight based on the combined weight of the formulation and filler and the filler comprises microspheres of aluminosilicate ceramic having an average particle size in a range of from 1 micrometer to 40 micrometers.

2. An abrasive article as claimed in Claim 1 which comprises from 40 to 60% by weight of microspheres based on the combined weight of the formulation and filler.

3. An abrasive article as claimed in Claim 1 in which the microspheres have an average particle size in a range from 1 micrometer to 20 micrometers.

4. An abrasive article as claimed in Claim 3 in which the microspheres have an average particle size in a range from 1 micrometer to 10 micrometers.

5. An abrasive article as claimed in Claim 1 in which the microspheres have an average particle size about 3 micrometers.

6. An abrasive article as claimed in Claim 1 in which the microspheres are transparent to visible light.

7. An abrasive article as claimed in Claim 1 in which the formulation further comprises mica and a visible light activated catalyst.

8. An abrasive article as claimed in Claim 7 in which the mica is present in an amount up to about 22% by weight of the combined weight of the formulation, filler and mica.

9. An abrasive article as claimed in Claim 7 in which, by weight, more of the microspheres are present than are the mica.

10. An abrasive article as claimed in Claim 1 in which the formulation further comprises up to 2% by weight of an organo functional silane, based on the weight of filler.
- 5 11. An abrasive article as claimed in Claim 10 in which the organo functional silane is a vinyl functional silane.
12. An abrasive article as claimed in Claim 1 in which the formulation additionally comprises up to 2% by weight of a surfactant based on the total weight of the formulation and
10 filler.
13. An abrasive article as claimed in Claim 1 in which the the formulation further comprises an epoxy acrylate precursor and the formulation is obtained by curing a composition comprising epoxy acrylate.
- 15 14. An abrasive article as claimed in Claim 1 comprising a layer of the cured formulation and filler.
15. An abrasive article as claimed in Claim 1 in the form of a coated abrasive comprising
20 abrasive particles which are supported on and adherently bonded to at least one major surface of a backing sheet by a make coating of a first binder material and a size coating of a second binder material, wherein at least one of the first or the second binder materials comprises the UV-cured formulation and filler.
- 25 16. An abrasive article as claimed in Claim 15 in which the size coating comprises the UV-cured formulation and filler.

17. A method of making an abrasive article, the method comprising providing abrasive particles and a UV-curable formulation and a filler, wherein the filler is substantially transparent to UV-radiation and the filler is present in a range from 20 to 80 percent by weight based on the combined weight of the cured formulation and filler and the filler comprises microspheres of aluminosilicate ceramic having an average particle size in a range of from 1 micrometer to 40 micrometers; and curing the UV-curable formulation by exposing it to UV radiation for a time sufficient to effect cure of the UV-curable formulation.
18. The method as claimed in Claim 17 wherein the filler comprises from 40 to 60% by weight of microspheres based on the combined weight of the formulation and filler.
19. The method as claimed in Claim 17 in which the microspheres have an average particle size in a range from 1 micrometer to 20 micrometers.
20. The method as claimed in Claim 17 in which the microspheres have an average particle size in a range from 1 micrometer to 10 micrometers.
21. The method as claimed in Claim 17 in which the microspheres have an average particle size about 3 micrometers.
22. The method as claimed in Claim 17 in which the microspheres are transparent to visible light.
23. The method as claimed in Claim 17 in which the formulation further comprises mica and a visible light activated catalyst.
24. The method as claimed in Claim 23 in which the mica is present in an amount up to about 22% by weight of the combined weight of the formulation, filler and mica.

25. The method as claimed in Claim 23 in which, by weight, more of the microspheres are present than are the mica.

26. The method as claimed in Claim 17 in which the formulation further comprises up to about 2% by weight of an organo functional silane, based on the weight of filler.

27. The method as claimed in Claim 26 in which the organo functional silane is a vinyl functional silane.

28. The method as claimed in Claim 17 in which the formulation additionally comprises up to about 2% by weight of a surfactant based on the weight of the formulation and filler.

29. The method as claimed in Claim 17 in which the the formulation further comprises an epoxy acrylate precursor and the formulation is obtained by curing a composition comprising epoxy acrylate.

30. The method as claimed in Claim 17 comprising a layer of the cured formulation and filler.

31. The method as claimed in Claim 17 in the form of a coated abrasive further comprising coating the curable formulation on a backing sheet wherein abrasive particles are supported on and adherently bonded to at least one major surface of the backing sheet by a make coating of a first binder material and a size coating of a second binder material, wherein at least one of the first or the second binder materials comprises the UV-cured formulation and filler.

32. The method as claimed in Claim 31 in which the size coating comprises the UV-cured formulation and filler.

33. A method of abrading the surface of a substrate comprising contacting an abrasive article comprising abrasive particles and a UV-cured formulation and a filler, wherein the filler is substantially transparent to UV-radiation and the filler is present in a range from 20 to 80 percent by weight based on the combined weight of the formulation and filler and the filler comprises microspheres of aluminosilicate ceramic having an average particle size in a range of from 1 micrometer to 40 micrometers with the substrate surface and moving at least one of the abrasive article or the substrate to abrade the surface.
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